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Indian Standard

SPECIFICATION FOR GAUGES FOR SERRATIONS

PART 1 FOR GAUGING EXTERNAL SERRATIONS

(Second Reprint MARCH 1990)

UDC 621·824·44 : 621·753·3

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *July* 1969

Indian Standard

SPECIFICATION FOR GAUGES FOR SERRATIONS

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(*Continued on page* 2)

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Indian Standard

SPECIFICATION FOR GAUGES FOR SERRATIONS

PART I FOR GAUGING EXTERNAL SERRATIONS

0. FOREWORD

0.1 This Indian Standard (Part I) was adopted by the Indian Standards Institution on 13 December 1968, after the draft finalized by the Transmission Devices Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This standard has been prepared with a view to assisting the industry in making gauges corresponding to the system of limits and fits recommended in IS:919-1963* and also in order to help the industry in obtaining uniformity in design and variety reduction of gauges. Only the important dimensions of gauges have been covered in this standard leaving the other details to the discretion of the manufacturer.

0.3 For various symbols and definitions, which are similar to the symbols and definitions for splines, IS:3665-1966† may be referred.

0.4 In the preparation of this standard, considerable assistance has been derived from the following standards, issued by the Deutscher Normenausschuss:

DIN 2264-1955 Kerbzahn — Gutlehrringe fur Kerbverzahnungen nach DIN 5481-Blatt 1. ('GO' ring gauges for serrations according to DIN 5481 Sheet 1).

DIN 2265-1955 Kerbzahn — Gegenlehren fur Kerbverzahnungen nach DIN 5481 Blatt 1. (Mating gauges for serrations according to DIN 5481 Sheet 1).

DIN 2266-1955 Kerbzahn — Ausschussrachenlehren fur Kerbverzahnungen nach DIN 5481 Blatt 1. ('NOT GO' gap gauges for serrations according to DIN 5481 Sheet 1).

DIN 2267-1955 Kerbzahn — Einstellehren fur Kerbzahn. Ausschussrachenlehren fur Kerbverzahnungen nach DIN 5481 Blatt 1. (Serrations setting gauges for 'NOT GO' gap gauges for serrations according to DIN 5481 Sheet 1).

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*Recommendations for limits and fits for engineering (*revised*).

†Dimensions for involute sided splines.

DIN 5481 (Blatt 3) — 1955 Kerbzahnnaben — und Kerbzahnwellen-Profile (Kerbverzahnungen) Gutlehrung der Kerbzahnwellen Lehrenmasse. (Gauging dimensions for 'GO' gauges for external serration).

DIN 5481 (Blatt 4) — 1955 Kerbzahnnaben — und Kerbzahnwellen-Profile (Kerbverzahnungen) Ausschusslehrung der Kerbzahnwellen, Lehrenmasse. (Gauging dimensions for 'NOT GO' gauges for external serration).

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part I) covers the main dimensions of GO and NOT GO gauges and their setting gauges for external serrations according to IS:3654-1966†.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 GO Gauge — The gauge used to check the limit of size which correspond to the maximum material condition, that is, the upper limit of a shaft or the lower limit of a hole.

2.2 NOT GO Gauge — The gauge used to check the limit of size which correspond to the minimum material condition, that is, the lower limit of a shaft or the upper limit of a hole.

3. MATERIAL

3.1 Gauge Members — The gauging members of gauges shall be made of suitable wear resisting steel, such as C85 of IS:1570-1961‡.

4. DIMENSIONS AND TOLERANCES

4.1 GO Gauges — The dimensions of GO gauges for external serrations and setting gauges for GO gauges shall be of dimensions as specified in Tables 1 and 2.

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*Rules for rounding off numerical values (*revised*).

†Dimensions for straight sided serrations.

‡Schedules for wrought steels for general engineering purposes.

4.2 NOT GO Gauges — The dimensions for NOT GO gauges for external serrations and setting gauges for NOT GO gauges shall be of dimensions as specified in Tables 3, 4 and 5.

5. DESIGNATION

5.1 The gauges shall be designated as GO or NOT GO and setting gauges for GO gauges or setting gauges for NOT GO gauges as applicable, the nominal size of the external serrations for which the gauges are used, and number of this standard.

Example

A GO gauge for external serrations of 10 × 12 shall be designated as:

GO Gauge, External serrations 10 × 12 IS:4966 (Part I)

6. OTHER REQUIREMENT

6.1 The gauging surfaces of gauges shall be hardened to not less than 750 *HV* (*see* IS:1501-1959*) or its equivalent on other scales.

6.2 The surface finish of the gauging surfaces shall be in accordance with the values for the corresponding symbols as given in IS:3073-1967† (*see* Tables 1 to 5).

7. MARKING

7.1 The gauges shall be marked with the following details:

a) Designation, and
b) Manufacturer's name or trade-mark.

7.1.1 The gauges may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

8. PACKING

8.1 The gauges shall be suitably protected against climatic conditions by an application of suitable anti-corrosive coating. The gauges may then be packed in suitable cases to prevent damage in transit.

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*Method for Vickers hardness test for steel.

†Assessment of surface roughness.

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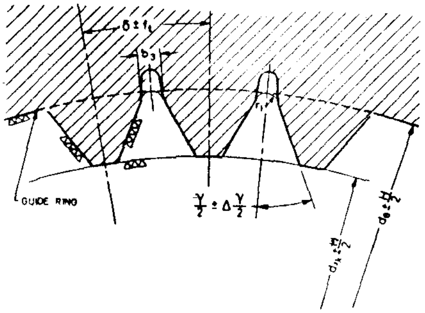
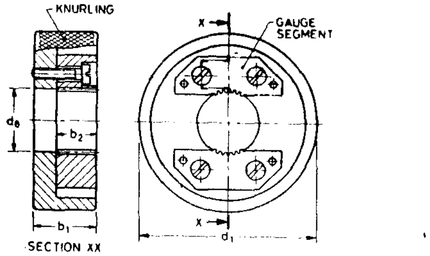
TABLE 1 DIMENSIONS FOR 'GO' GAUGES FOR EXTERNAL SERRATIONS

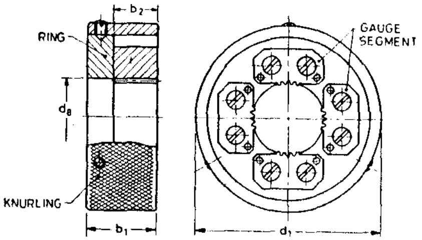
(*Clauses* 4.1 *and* 6.2)

All dimensions in millimetres.





FOR SERRATIONS NOMINAL SIZE UP TO 26 × 30



FOR SERRATIONS NOMINAL SIZE ABOVE 26 × 30

NOMINAL SIZE	b_3 Max	$^*d_{ik}$	d_8	$\frac{H}{2}$ µm	r_1 Approx	δ	†f_t µm	$\frac{\gamma}{2}$	$\Delta\frac{\gamma}{2}$	d_1	b_1	b_2	No. OF TEETH FOR EACH GAUGE SEGMENT
7 × 8	0·2	7·18	7·9	5	0·08	12° 51′ 26″	± 3	23° 34′ 18″	15′	32	10	6	5
8 × 10	0·2	8·38	9·9	5	0·08	12° 51′ 26″	± 3	23° 34′ 18″	15′	40	12	7	5
10 × 12	0·2	10·39	11·8	5	0·10	12°	± 3	24°	15′	45	14	8	5
12 × 14	0·2	12·29	14·0	5	0·10	11° 36′ 46″	± 4	24° 11′ 37″	10′	50	16	10	5
15 × 17	0·3	15·19	17·0	5	0·15	11° 15′	± 4	24° 12′ 30″	10′	56	20	12	5
17 × 20	0·3	17·59	19·8	5	0·15	10° 54′ 33″	± 4	24° 32′ 44″	10′	63	22	14	6
21 × 24	0·3	21·10	23·7	6	0·15	10° 35′ 18″	± 5	24° 42′ 21″	9′	70	26	16	6
26 × 30	0·5	26·80	29·8	6	0·25	10° 17′ 9″	± 5	24° 51′ 26″	9′	80	28	18	6
30 × 34	0·6	30·81	33·8	6	0·30	10°	± 5	25°	9′	84	32	20	4
36 × 40	0·9	36·31	39·7	9	0·50	9° 43′ 47″	± 5	25° 8′ 7″	9′	90	32	20	4
40 × 44	0·9	40·31	43·8	9	0·50	9° 28′ 25″	± 6	25° 15′ 48″	9′	96	36	22	4
45 × 50	0·9	45·32	49·8	9	0·50	9° 13′ 51″	± 6	25° 23′ 5″	9′	104	36	22	4
50 × 55	1·1	50·32	54·8	10	0·60	9°	± 6	25° 30′	9′	130	40	24	4
55 × 60	1·2	55·34	59·8	10	0·60	8° 34′ 17″	± 6	25° 42′ 52″	9′	135	40	24	4
60 × 65	1·3	60·34	64·8	10	0·60	8° 46′ 50″	± 8	27° 6′ 36″	8′	140	40	24	4
65 × 70	1·3	65·34	69·8	10	0·60	8°	± 8	25° 30′	8′	145	40	24	4
70 × 75	1·3	70·36	74·8	10	0·60	7° 30′	± 8	26° 15′	8′	150	40	24	4
75 × 80	1·3	75·36	79·8	10	0·60	7° 3′ 32″	± 8	26° 58′ 14″	8′	155	46	28	5
80 × 85	1·3	80·36	84·8	12	0·60	6° 32′ 44″	± 10	25° 43′ 38″	8′	160	46	28	5
85 × 90	1·3	85·38	89·8	12	0·60	6° 12′ 25″	± 10	26° 23′ 48″	8′	165	46	28	5
90 × 95	1·3	90·38	94·8	12	0·60	5° 54′ 6″	± 10	27° 2′ 58″	8′	170	46	28	5
95 × 100	1·3	95·38	99·8	12	0·60	5° 32′ 18″	± 10	26° 13′ 51″	8′	175	46	28	5
100 × 105	1·3	100·38	104·8	12	0·60	5° 17′ 39″	± 12	26° 51′ 11″	8′	180	50	30	5
105 × 110	1·3	105·41	109·8	12	0·60	5° 4′ 14″	± 12	27° 27′ 54″	8′	185	50	30	5
110 × 115	1·3	110·41	114·8	12	0·60	4° 48′	± 12	26° 6′	8′	190	50	30	5
115 × 120	1·3	115·41	119·8	12	0·60	4° 36′ 55″	± 12	26° 41′ 32″	8′	195	50	30	5
120 × 125	1·3	120·41	124·8	13	0·60	4° 26′ 40″	± 15	27° 16′ 40″	8′	200	50	30	5

NOTE — Serrations up to nominal size 50 × 60 have 60° serration angle and serrations above the nominal size 55 × 60 have 55° serration angle.

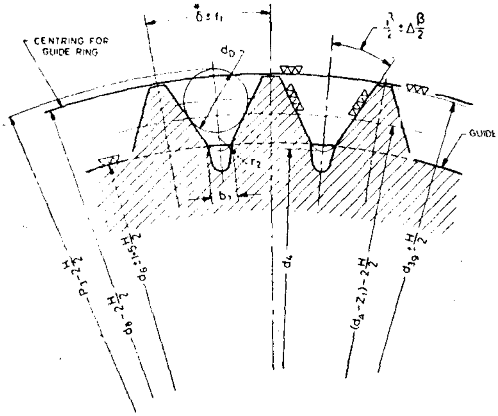
*d_{ik} is the minimum value of the crest diameter of the mating internal serrations (*see* IS : 3654-1966 'Dimensions for straight sided serrations').

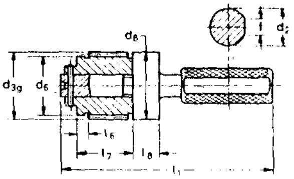
†The tolerance f_t for the pitch angle δ has been given not as an angle but in linear unit (µm). This shall be considered as the tolerance for the pitch and applies over any number of pitches.

TABLE 2 DIMENSIONS FOR SETTING GAUGES FOR 'GO' GAUGES FOR EXTERNAL SERRATIONS

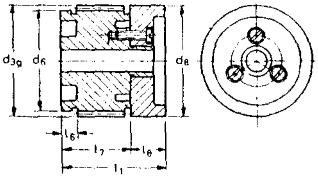
(*Clauses* 4.1 *and* 6.2)

All dimensions in millimetres.





FOR SERRATIONS NOMINAL SIZE UP TO 26 × 30



FOR SERRATIONS NOMINAL SIZE ABOVE 26 × 30

NOMINAL SIZE	b_1 Max	CONTACT Dia d_A	d_D	†d_{3g}	d_4 Max	d_6	d_8	$\frac{H}{2}$ µm	P_1	r_2 Approx	Z_1 µm	$\frac{\beta}{2}$	$\Delta\frac{\beta}{2}$	l_1 Approx	l_6	l_7	l_8	f	d_2
7 × 8	—	7·500	0·486	7·82	6·91	7·1	7·9	5	8·209	0·08	8	30°	15′	45	4	10	4	3	6
8 × 10	—	9·000	0·583	9·81	8·26	8·3	9·9	5	9·853	0·08	8	30°	15′	52	4	11	5	4	7
10 × 12	0·25	11·000	0·665	11·71	10·20	10·3	11·8	5	11·975	0·10	8	30°	15′	60	4	12	6	4	8
12 × 14	0·25	13·000	0·760	13·91	12·06	12·2	14·0	5	14·099	0·10	8	30°	10′	68	4	15	9	5	10
15 × 17	0·3	16·000	0·907	16·91	14·91	15·1	17·0	5	17·332	0·15	9	30°	10′	80	5	18	9	6	12
17 × 20	0·35	18·500	1·016	19·70	17·37	17·5	19·8	5	19·974	0·20	9	30°	10′	85	5	21	12	6	12
21 × 24	0·5	22·000	1·173	23·60	20·76	21	23·7	6	23·726	0·25	11	30°	9′	90	5	23	12	7	16
26 × 30	0·6	28·000	1·451	29·70	26·40	26·7	29·8	6	30·109	0·3	11	30°	9′	95	5	25	12	7	16
30 × 24	0·7	32·000	1·612	33·69	30·38	30·7	33·8	6	34·377	0·4	11	30°	9′	42	6	28	14	—	—
36 × 40	0·7	38·000	1·862	39·59	35·95	36·2	39·7	9	40·704	0·4	22	30°	9′	42	6	28	14	—	—
40 × 44	0·8	42·000	2·004	43·68	39·72	40·2	43·8	9	44·950	0·4	22	30°	9′	46	6	30	16	—	—
45 × 50	0·8	47·500	2·209	49·68	44·97	45·2	49·8	9	50·714	0·4	22	30°	9′	47	7	31	16	—	—
50 × 55	0·9	52·500	2·380	54·56	49·72	50·2	54·8	10	56·006	0·4	25	30°	9′	51	7	33	18	—	—
55 × 60	1·0	57·500	2·483	59·66	54·76	55·2	59·8	10	61·160	0·5	25	30°	9′	51	7	33	18	—	—
60 × 65	1·0	62·536	2·851	64·66	59·44	60·2	64·8	10	66·760	0·5	25	31° 30′	8′	51	7	33	18	—	—
65 × 70	1·2	67·500	2·707	69·64	64·35	65·2	69·8	10	71·443	0·5	25	29° 30′	8′	51	7	33	18	—	—
70 × 75	1·2	72·432	2·699	74·64	69·38	70·2	74·8	10	76·420	0·5	25	30°	8′	51	7	33	18	—	—
75 × 80	1·2	77·407	2·722	79·64	74·35	75·2	79·8	10	81·414	0·5	25	30° 30′	8′	58	8	38	20	—	—
80 × 85	1·2	82·420	2·644	84·62	79·28	80·2	84·8	12	86·252	0·5	28	29°	8′	58	8	38	20	—	—
85 × 90	1·2	87·390	2·654	89·62	84·31	85·2	89·8	12	91·292	0·5	28	29° 30′	8′	58	8	38	20	—	—
90 × 95	1·2	92·400	2·695	94·62	89·33	90·2	94·8	12	96·355	0·5	28	30°	8′	58	8	38	20	—	—
95 × 100	1·2	97·580	2·744	99·62	94·25	95·2	99·8	12	101·570	0·5	28	29°	8′	58	8	38	20	—	—
100 × 105	1·2	102·610	2·791	104·59	99·35	100·2	104·8	12	106·716	0·5	28	29° 30′	8′	62	8	40	22	—	—
105 × 110	1·2	107·675	2·870	109·59	104·33	105·2	109·8	12	111·898	0·5	28	30′	8′	62	8	40	22	—	—
110 × 115	1·2	112·340	2·582	114·59	109·05	110·2	114·8	12	116·080	0·5	28	28° 30′	8′	62	8	40	22	—	—
115 × 120	1·2	117·400	2·644	119·59	114·23	115·2	119·8	12	121·275	0·5	28	29°	8′	62	8	40	22	—	—
120 × 125	1·2	122·500	2·738	124·54	119·30	120·2	124·8	13	126·509	0·5	32	29° 30′	8′	62	8	40	22	—	—

NOTE — Serration up to nominal size 55 × 60 have 60° serration angle and serrations above the nominal size 55 × 60 have 55° serration angle.

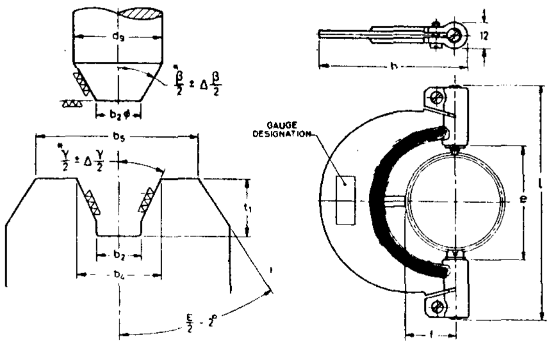
*The number of teeth shall be same as the number of serrations, the pitch angle δ and the tolerance f_t shall be as given in Table 1.

†d_{3g} is the maximum value of major diameter (d_3) of the shaft (*see* IS : 3654-1966 ' Dimensions for straight sided serrations ').

TABLE 3 DIMENSIONS FOR 'NOT GO' GAUGES FOR EXTERNAL SERRATIONS

(*Clauses* 4.2 *and* 6.2)

All dimensions in millimetres.



d_9
*$\frac{\beta}{2} \pm \Delta\frac{\beta}{2}$
$b_2\phi$
b_5
*$\frac{\gamma}{2} \pm \Delta\frac{\gamma}{2}$
t_1
b_2
b_4
$\frac{\epsilon}{2}$ - 2°
GAUGE DESIGNATION
12
h
e
l
f

Nominal Size	b_2 Nom	b_2 Tol	b_4 Nom	b_4 Tol	b_5 Nom	b_5 Tol	d_9 Nom	d_9 Tol	t_1 *Min*	$\frac{\epsilon}{2}$	e Nom	e Tol	f Nom	f Tol	l	h
7 × 8	0·20	+ 0·05	—	—	—	—	1 *Min*	—	—	—	18	+ 0·2	3·90	+ 0·10	76	35
8 × 10	0·25	+ 0·05	—	—	—	—	1 *Min*	—	—	—	18	+ 0·2	4·90	+ 0·10	76	35
10 × 12	0·25	+ 0·05	—	—	—	—	1 *Min*	—	—	—	18	+ 0·2	5·85	+ 0·10	78	35
12 × 14	0·3	+ 0·05	0·85	− 0·05	1·55	− 0·09	1 *Min*	—	0·8	35°	26	+ 0·2	6·95	+ 0·15	84	43
15 × 17	0·4	+ 0·05	—	—	—	—	1·15	− 0·1	—	—	26	+ 0·2	8·45	+ 0·15	84	43
17 × 20	0·5	+ 0·05	1·2	− 0·08	2·1	− 0·10	1·30	− 0·1	1·0	35°	26	+ 0·2	9·90	+ 0·15	86	43
21 × 24	0·5	+ 0·05	—	—	—	—	1·50	− 0·1	—	—	36	+ 0·2	11·9	+ 0·15	94	53
26 × 30	0·7	+ 0·05	1·7	− 0·10	3·1	− 0·15	1·80	− 0.1	1·4	35°	36	+ 0·2	14·9	+ 0·2	96	53
30 × 34	0·9	+ 0·05	—	—	—	—	2·0	− 0·1	—	—	46	+ 0·2	16·9	+ 0·2	104	63
36 × 40	1·1	+ 0·1	2·1	− 0·10	4·1	− 0·2	2·2	− 0·12	1·4	33°	46	+ 0·2	19·9	+ 0·2	106	63
40 × 44	1·1	+ 0·1	—	—	—	—	2·3	− 0·12	—	—	56	+ 0·3	21·9	+ 0·2	114	73
45 × 50	1·1	+ 0·1	2·4	− 0·15	5·0	− 0·4	2·6	− 0·14	1·7	33°	56	+ 0·3	24·9	+ 0·2	116	73
50 × 55	1·5	+ 0·1	—	—	—	—	2·7	− 0·16	—	—	66	+ 0·3	27·4	+ 0·2	124	84
55 × 60	1·5	+ 0·1	—	—	—	—	2·8	− 0·16	—	—	66	+ 0·3	29·9	+ 0·2	126	84
60 × 65	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	33°	76	+ 0·3	32·4	+ 0·3	134	94
65 × 70	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	33°	76	+ 0·3	34·9	+ 0·3	136	94
70 × 75	1·6	+ 0·1	—	—	—	—	3	− 0·18	—	—	86	+ 0·3	37·4	+ 0·3	144	104
75 × 80	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	33°	86	+ 0·3	39·9	+ 0·3	146	104
80 × 85	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	30°	96	+ 0·3	42·4	+ 0·3	154	114
85 × 90	1·6	+ 0·1	—	—	—	—	3	− 0·18	—	—	96	+ 0·3	44·9	+ 0·3	156	114
90 × 95	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	30°	106	+ 0·3	47·4	+ 0·3	164	125
95 × 100	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	30°	106	+ 0·3	49·9	+ 0·3	166	125
100 × 105	1·6	+ 0·1	—	—	—	—	3	− 0·18	—	—	116	+ 0·3	52·4	+ 0·3	174	135
105 × 110	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	30°	116	+ 0·3	54·9	+ 0·3	176	135
110 × 115	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	30°	126	+ 0·3	57·4	+ 0·3	184	146
115 × 120	1·6	+ 0·1	—	—	—	—	3	− 0·18	—	—	126	+ 0·3	59·9	+ 0·3	186	146
120 × 125	1·6	+ 0·1	2·9	− 0·15	6·2	− 0·5	3	− 0·18	1·8	30°	136	+ 0·3	62·4	+ 0·3	194	156

Note 1 — Serrations up to nominal size 55 × 60 have 60° serration angle and serrations above the nominal size 55 × 60 have 55° serration angle.

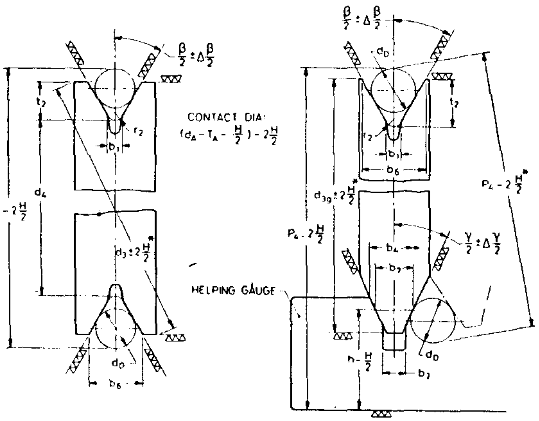
Note 2 — When number of serrations is even, the gauge shall have similar taper ends.

*The values of $\frac{\gamma}{2}$, $\frac{\Delta\gamma}{2}$, $\frac{\beta}{2}$ and $\frac{\Delta\beta}{2}$ shall be as given in Tables 1 and 2.

TABLE 4 DIMENSIONS FOR SETTING GAUGES FOR 'NOT GO' GAUGES FOR EXTERNAL SERRATIONS

(*Clauses* 4.2 *and* 6.2)

All dimensions in millimetres.


$\frac{\beta}{2} \pm \Delta\frac{\beta}{2}$
t_2
r_2
b_1
CONTACT DIA: $(d_A - T_A - \frac{H}{2}) - 2\frac{H}{2}$
d_4
$P_4 - 2\frac{H}{2}$
$d_3 \pm 2\frac{H}{2}$*
HELPING GAUGE
d_D
b_6
$d_{3g} \pm 2\frac{H}{2}$*
$P_4 - 2\frac{H}{2}$*
b_4
b_7
$\frac{\gamma}{2} \pm \Delta\frac{\gamma}{2}$
$h - \frac{H}{2}$

FOR EVEN NUMBER OF SERRATIONS

FOR ODD NUMBER OF SERRATIONS

*Measurement over pins method for nominal size up to 17 × 20.

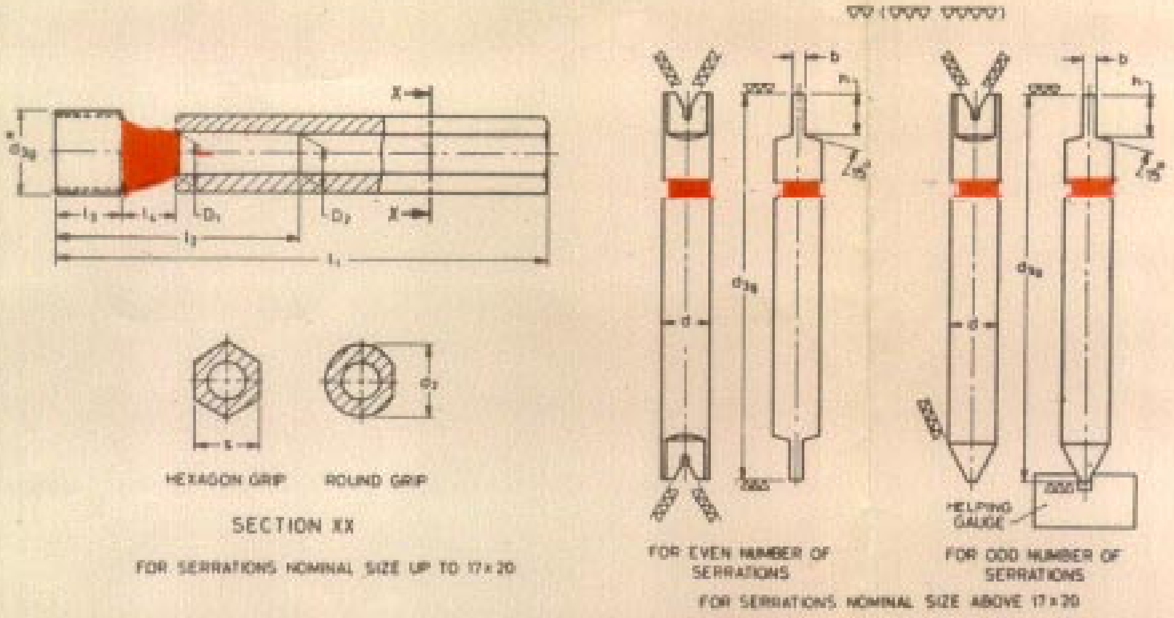
Nominal Size	b_1	b_2		b_4		b_6		b_7	d_A	d_D	d_3	†d_{3g}	d_4	h	$\frac{H}{2}$	P_4		r_2	t_2	T_A		$\frac{\beta}{2}$	$\Delta\frac{\beta}{2}$	$\frac{\gamma}{2}$	$\Delta\frac{\gamma}{2}$
	Max	Nom	Tol	Nom	Tol	Nom	Tol				a 11		*Max*		µm	Fine	Coarse	Approx	*Min*	Fine	Coarse				
7 × 8	—	0·2	+ 0·05	—	—	0·6	− 0·05	—	7·500	0·486	8·1	7·82	6·91	—	5	8·155	8·099	0·08	0·45	63	126	30°	15′	23° 34′ 18″	15′
8 × 10	—	0·25	+ 0·05	—	—	1	− 0·05	—	9·000	0·583	10·1	9·81	8·26	—	5	9·797	9·738	0·08	0·75	65	130	30°	15′	23° 34′ 18″	15′
10 × 12	0·25	0·25	+ 0·05	—	—	1	− 0·05	—	11·000	0·665	12·0	11·71	10·20	—	5	11·916	11·854	0·10	0·75	68	136	30°	15′	24°	15′
12 × 14	0·25	0·3	+ 0·05	0·85	− 0·05	1·2	− 0·08	—	13·000	0·760	14·2	13·91	12·06	—	5	14·038	13·975	0·10	0·90	70	140	30°	10′	24° 11′ 37″	10′
15 × 17	0·30	0·4	+ 0·05	—	—	1·3	− 0·08	—	16·000	0·907	17·2	16·91	14·91	—	5	17·267	17·199	0·15	1·0	75	150	30°	10′	24° 12′ 30″	10′
17 × 20	0·35	0·5	+ 0·05	1·2	− 0·08	1·6	− 0·09	—	18·500	1·016	20·0	19·70	17·37	—	5	19·904	19·831	0·20	1·2	80	160	30°	10′	24° 32′ 44″	10′
21 × 24	0·5	0·5	+ 0·05	—	—	1·9	− 0·10	—	22·000	1·173	23·9	23·60	20·76	—	6	23·653	23·574	0·25	1·4	85	170	30°	9′	24° 42′ 21″	9′
26 × 30	0·6	0·7	+ 0·05	1·7	− 0·10	2·2	− 0·10	1·252	28·000	1·451	30·0	29·70	26·40	6	6	34·966	34·875	0·3	1·6	95	190	30°	9′	24° 51′ 26″	9′
30 × 34	0·7	0·9	+ 0·05	—	—	2·4	− 0·15	—	32·000	1·612	34·0	33·69	30·38	—	6	34·289	34·197	0·4	1·6	100	200	30°	9′	25°	9′
36 × 40	0·7	1·1	+ 0·1	2·1	− 0·10	2·5	− 0·15	1·608	38·000	1·862	39·9	39·59	35·95	6	9	45·252	45·147	0·4	1·8	110	220	30°	9′	25° 8′ 7″	9′
40 × 44	0·8	1·1	+ 0·1	—	—	2·7	− 0·15	—	42·000	2·004	44·0	43·68	39·72	—	9	44·855	44·748	0·4	1·9	115	230	30°	9′	25° 15′ 48″	9′
45 × 50	0·8	1·1	+ 0·1	2·4	− 0·15	3·2	− 0·15	1·908	47·500	2·209	50·0	49·68	44·97	6	9	54·993	54·871	0·4	2·4	125	250	30°	9′	25° 23′ 5″	9′
50 × 55	0·9	1·5	+ 0·1	—	—	3·3	− 0·15	—	52·500	2·380	54·9	54·56	49·72	—	10	55·894	55·768	0·4	2·4	135	270	30°	9′	25° 30′	9′
55 × 60	1·0	1·5	+ 0·1	—	—	3·4	− 0·2	—	57·500	2·483	60·0	59·66	54·76	—	10	61·044	60·913	0·5	2·5	140	280	30°	9′	25° 42′ 52″	9′
60 × 65	1·0	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·354	62·536	2·851	65	64·66	59·44	9	10	73·509	73·364	0·5	2·5	150	300	31° 30′	8′	27° 6′ 36″	8′
65 × 70	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·350	67·500	2·707	70	69·64	64·35	9	10	78·318	78·164	0·5	2·5	160	320	29° 30′	8′	25° 30′	8′
70 × 75	1·2	1·6	+ 0·1	—	—	3·6	− 0·2	—	72·432	2·699	75	74·64	69·38	—	10	76·278	76·124	0·5	2·5	165	330	30°	8′	26° 15′	8′
75 × 80	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·440	77·407	2·722	80	79·64	74·35	9	10	88·256	88·096	0·5	2·5	175	350	30° 30′	8′	26° 58′ 14″	8′
80 × 85	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·390	82·420	2·644	85	84·62	79·28	9	12	93·163	92·980	0·5	2·5	185	370	29°	8′	25° 43′ 38″	8′
85 × 90	1·2	1·6	+ 0·1	—	—	3·6	− 0·2	—	87·390	2·654	90	89·62	84·31	—	12	91·126	90·946	0·5	2·5	190	380	29° 30′	8′	26° 23′ 48″	8′
90 × 95	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·418	92·400	2·695	95	94·62	89·33	9	12	103·188	102·988	0·5	2·5	200	400	30°	8′	27° 2′ 58″	8′
95 × 100	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·314	97·580	2·744	100	99·62	94·25	9	12	108·381	108·178	0·5	2·5	205	410	29°	8′	26° 13′ 51″	8′
100 × 105	1·2	1·6	+ 0·1	—	—	3·6	− 0·2	—	102·610	2·791	105	104·59	99·35	—	12	106·525	106·320	0·5	2·5	215	430	29° 30′	8′	26° 51′ 11″	8′
105 × 110	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·273	107·675	2·870	110	109·59	104·33	9	12	118·579	118·352	0·5	2·5	220	440	30°	8′	27° 27′ 54″	8′
110 × 115	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·431	112·340	2·582	115	114·59	109·05	9	12	122·991	122·763	0·5	2·5	230	460	28° 30′	8′	26° 6′	8′
115 × 120	1·2	1·6	+ 0·1	—	—	3·6	− 0·2	—	117·400	2·644	120	119·59	114·23	—	12	121·039	120·827	0·5	2·5	240	480	29°	8′	26° 41′ 32″	8′
120 × 125	1·2	1·6	+ 0·1	2·9	− 0·15	3·6	− 0·2	2·363	122·500	2·738	125	124·54	119·30	9	13	133·266	133·019	0·5	2·5	250	500	29° 30′	8′	27° 16′ 40″	8′

NOTE — Serrations up to nominal size 55 × 60 have 60° serration angle and serrations above the nominal size 55 × 60 have 55° serration angle.

†d_{3g} is the maximum value of major diameter (d_3) of the shaft (*see* IS : 3654-1966 'Dimensions for straight sided serrations').

TABLE 5 OVERALL DIMENSIONS FOR SETTING GAUGES FOR 'NOT GO' GAUGES FOR EXTERNAL SERRATIONS

(*Clauses* 4.2 *and* 6.2)


X
X
d_{3g}*
l_3
l_4
D_1
D_2
l_2
l_1
d_2
s
HEXAGON GRIP
ROUND GRIP
SECTION XX
FOR SERRATIONS NOMINAL SIZE UP TO 17 × 20
b
h_1
15°
d_{3g}
d
HELPING GAUGE
FOR EVEN NUMBER OF SERRATIONS
FOR ODD NUMBER OF SERRATIONS
FOR SERRATIONS NOMINAL SIZE ABOVE 17 × 20

NOMINAL SIZE	D_1	D_2	d_2	l_1 Approx	l_2	l_3	l_4 *Min*	s	b	d	h
7 × 8	5·5	5·16	10	71·0	32·0	7·0	8	9	—	—	—
8 × 10	5·5	5·16	10	72·5	33·5	8·5	8	9	—	—	—
10 × 12	7·0	6·58	12	82	40	10	9	11	—	—	—
12 × 14	7·0	6·58	12	83	41	11	9	11	—	—	—
15 × 17	9·0	8·50	16	93	48	13	10	14	—	—	—
17 × 20	12	11·48	20	107	53	15	12	17	—	—	—
21 × 24	—	—	—	—	—	—	—	—	1·5	4	3·5
26 × 30	—	—	—	—	—	—	—	—	1·5	4	4·0
30 × 34	—	—	—	—	—	—	—	—	1·5	4	4·5
36 × 40	—	—	—	—	—	—	—	—	2·0	6	5·0
40 × 44	—	—	—	—	—	—	—	—	2·0	6	5·5
45 × 50	—	—	—	—	—	—	—	—	2·0	6	6·0
50 × 55	—	—	—	—	—	—	—	—	2·0	6	6·5
55 × 60	—	—	—	—	—	—	—	—	2·0	6	6·5
60 × 65	—	—	—	—	—	—	—	—	2·0	8	7·0
65 × 70	—	—	—	—	—	—	—	—	2·0	8	7·0
70 × 75	—	—	—	—	—	—	—	—	2·0	8	7·0
75 × 80	—	—	—	—	—	—	—	—	2·0	8	7·0
80 × 85	—	—	—	—	—	—	—	—	2·0	8	7·0
85 × 90	—	—	—	—	—	—	—	—	2·0	8	7·0
90 × 95	—	—	—	—	—	—	—	—	2·0	8	7·0
95 × 100	—	—	—	—	—	—	—	—	2·0	8	7·0
100 × 105	—	—	—	—	—	—	—	—	2·5	10	7·0
105 × 110	—	—	—	—	—	—	—	—	2·5	10	7·0
110 × 115	—	—	—	—	—	—	—	—	2·5	10	7·0
115 × 120	—	—	—	—	—	—	—	—	2·5	10	7·0
120 × 125	—	—	—	—	—	—	—	—	2·5	10	7·0

NOTE — Number of serrations situated opposite: each two serrations for even number of serrations. Two and three serrations for odd number of serrations.

*The Values of d_{3g} shall be as given in Table 4.

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